Chapter 12
Conclusions

In this book we have described our Bayesian approach to defining the MH370 search zone. The three ingredients required for the Bayesian approach are

- a prior (defined by the Malaysian military radar)
- a likelihood function describing the relationship between BTO and BFO measurements and the aircraft state vector and
- a model of the aircraft dynamics.

All three are described in detail. To increase confidence in the models and process developed, validation has been performed using previous flights of the accident aircraft, and data from other flights in the air at the same time as the accident flight. In all cases the true location aligns with that predicted by the Bayesian analysis. All validation trajectories have significant numbers of speed, heading and altitude changes, which are successfully captured by the model. This is in stark contrast with the accident flight which results in a prediction of no significant manoeuvre after the Southerly turn near the Northern tip of Sumatra before continuing in a Southerly direction until it ran out of fuel in the Southern Indian Ocean, West of Australia.

The search zone is dependent on the surface area covered by expected descent scenarios from the time of the final satellite log-on attempt at 00:19. This has been defined by expert accident investigators at the ATSB. If the actual descent scenario was inconsistent with the distribution of possibilities considered then the search zone may need to increase in area.

S. Davey et al., *Bayesian Methods in the Search for MH370*, SpringerBriefs in Electrical and Computer Engineering, DOI 10.1007/978-981-10-0379-0_12